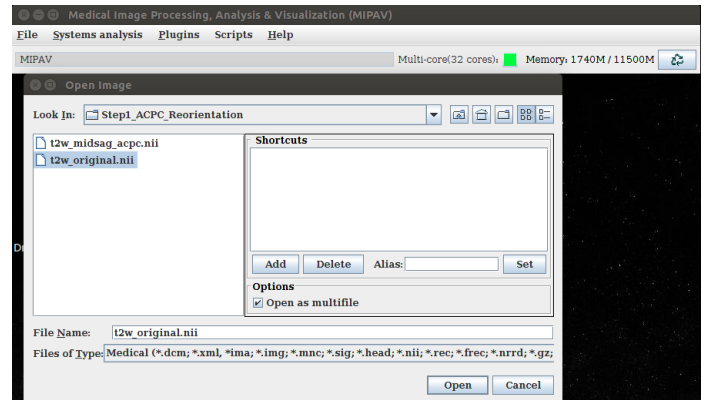
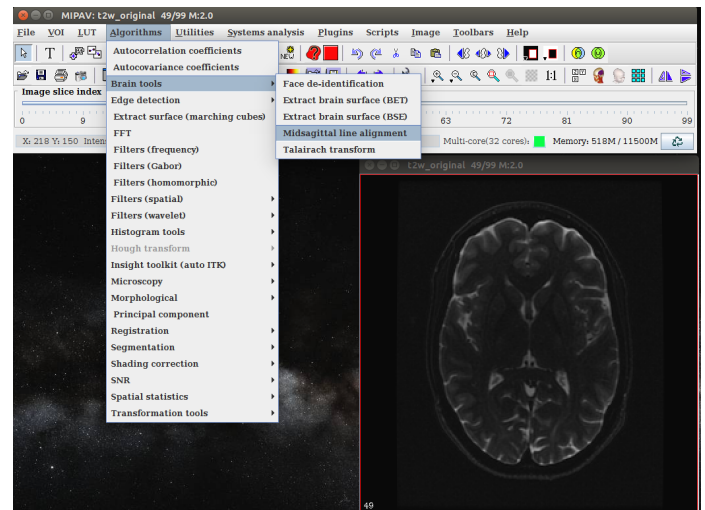


STEP 1. ACPC reorientation of a structural Image

a) Open MIPAV. Open image from disk (under file menu). Open your original structural image.



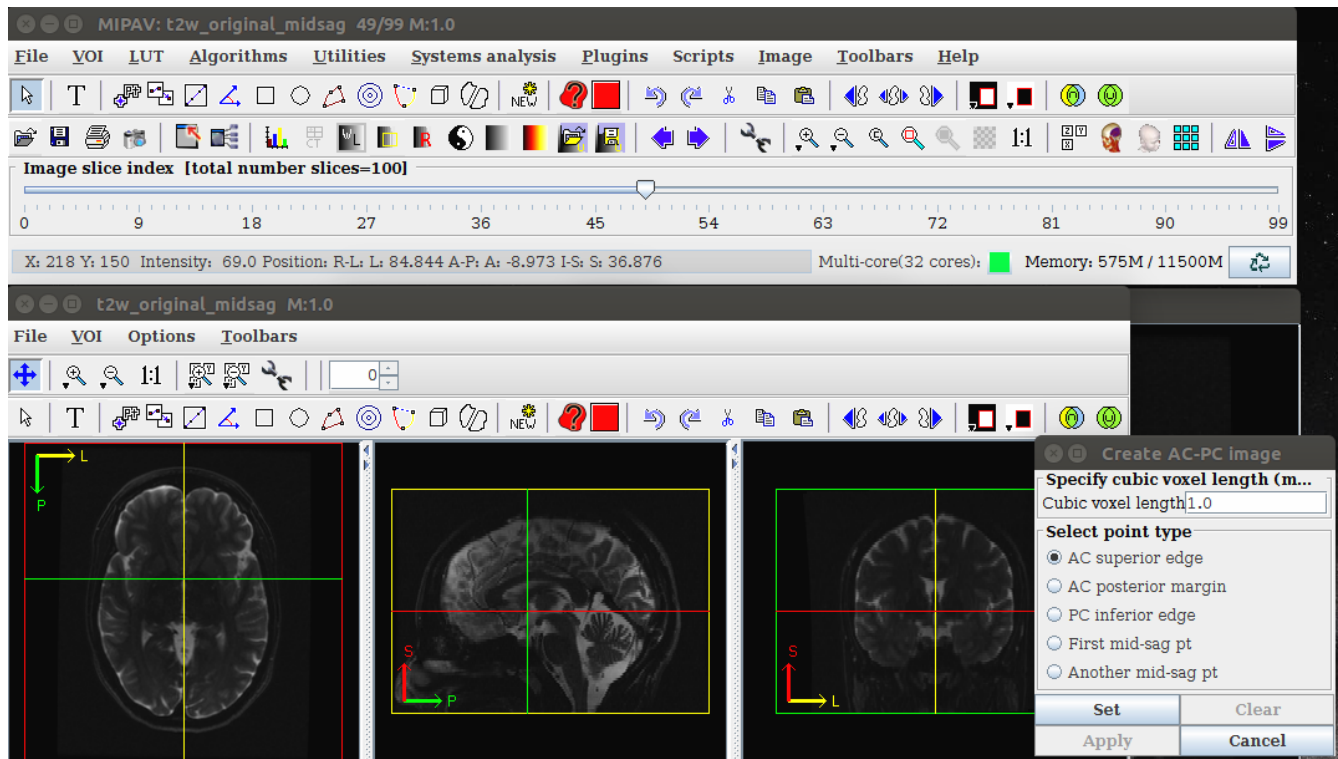
b) Perform midsagittal alignment (fig 2).



*To further understand about midsagittal alignment please visit:
http://mipav.cit.nih.gov/pubwiki/index.php/Midsagittal_line_alignment

c) Select the generated image, perform Talairach transform (Algorithms-> Brain tools → Talairach transform) and perform ACPC transform.

d) Select your Anterior Commissure, click “Set” twice. Select your Posterior Commissure, click “Set”. Select a point in the cortical region, on the sagittal slice and “Set”. Select another point on the sagittal slice and “Set”. Then “Apply” to generate the final reoriented image and save the new image (fig3).



* AC-PC alignment procedure and selection of points is detailed in the following manual:
<http://mipav.cit.nih.gov/documentation/presentations/talairach.pdf>

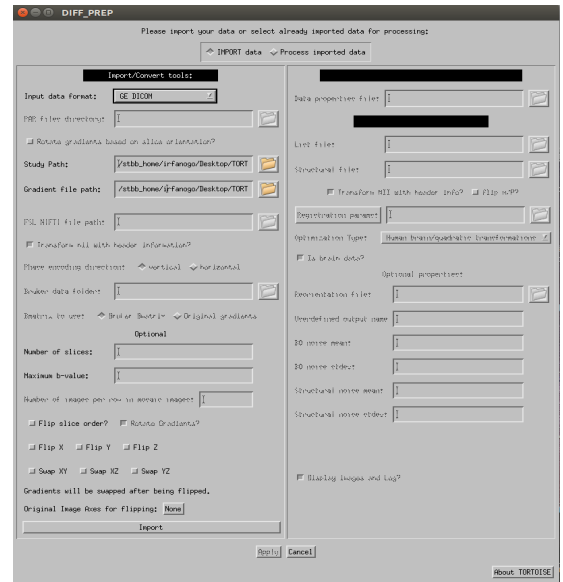
STEP 2. DATA IMPORT in DIFFPREP

a) Load DIFFPREP gui as follows:

In a terminal (fig 4) go to the location where you have installed TORTOISE software. From here you can load DIFFPREP gui using the following path:

.../TORTOISE_V2.1.0/DIFF_PREP/diffprep_main/prepvm

b) Make sure that the Import data radio button is checked on. Select the input data format from the drop down menu: For this example pick 'GE Dicom'



c) Load the study path:

...../TORTOISE_tutorial_2014/Step2_Data_Import/dti_35vol_AP_scan1/

d) Load the gradient file path:

...../TORTOISE_tutorial_2014/Step2_Data_Import/GE_gradients.txt

e) Hit import

STEP 3 : DIFFPREP_DMC

a) Once the data is imported, in the same DIFFPREP gui the 'Process imported data' radio button will automatically get checked.

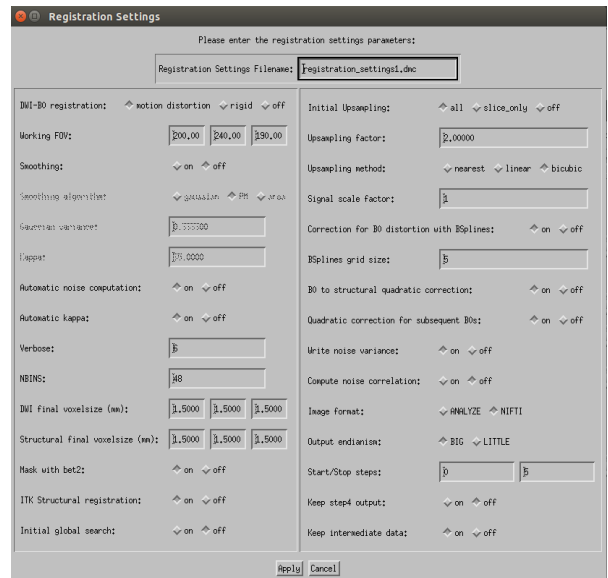
b) List file: Here you will see the 'list file path' automatically selected.

(Note: When you import the data, a proc directory has been created outside the raw data folder. This proc directory contains: list file, path file and bmatrix file).

c) Structural file: You will select the ACPC-aligned structural file.

d) Registration params: select the default registration parameter file 'registration_settings1.dmc'.

Note: Registration parameter settings can be edited to suit your output needs. You may edit the file by clicking on the button that says 'registration params'. You will see a Gui where you can edit the fields to tailor the registration output to your desired output resolution.



e) Optimization Type: select 'human brain/quadratic transformations'

(note: there are three other transformations options under the drop down menu)

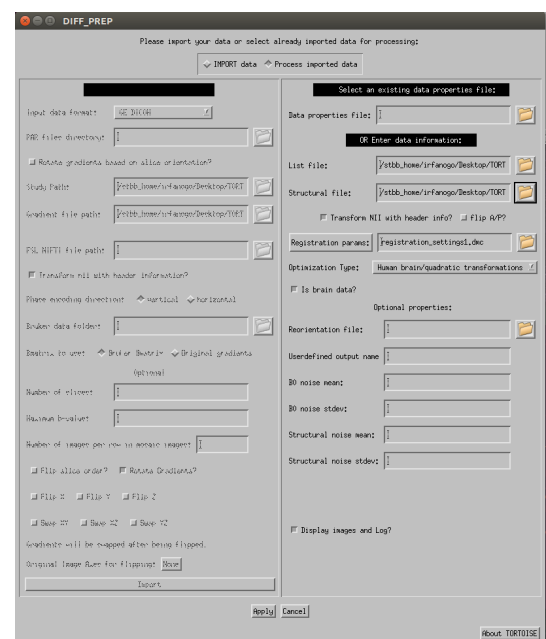
f) Hit Apply and the processing will begin.

The outputs will be as follows:

_up files: upsampled data

_rpd files: transformation files

_DMC files: distortion, motion corrected files



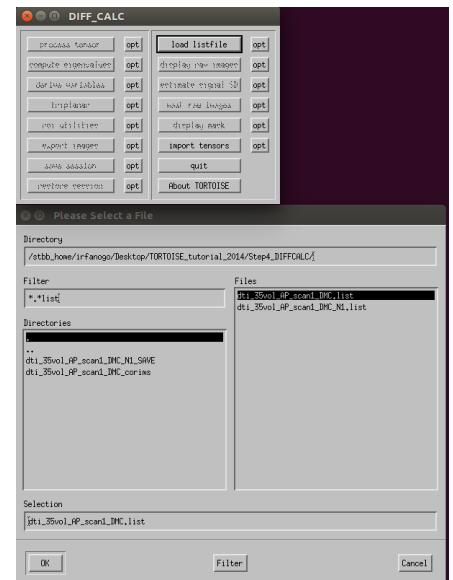
DIFFPREP import and processing details are available at the following location:
https://science.nichd.nih.gov/confluence/display/nihpd/DIFF_PREP+Main

STEP 4: DIFFCALC

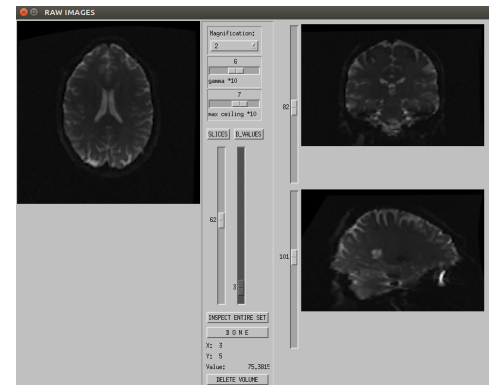
a) Load diffprep gui as follows:

In a terminal go to the location where you have installed TORTOISE software. From here you can load DIFFCALC gui using the following path: `.../TORTOISE_V2.1.0/DIFF_CALC/diffcalc_main/calcvn`

b) In the GUI, please click on 'load images' button. Select the location that points to the `_proc` directory. Pick the `_DMC.list` file.

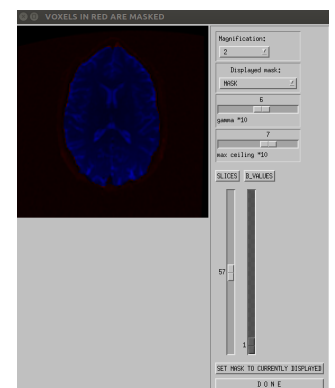


c) Click on the display raw images button to visually inspect the processed data, (fig 8).

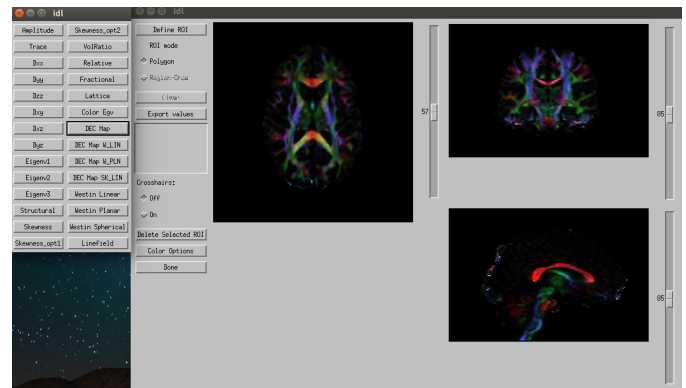


Note: You may also click on “inspect entire set” button to view all the volumes and slices at the same time.

d) Hit done to go back to the DIFF_CALC GUI



m) You may also view the data in triplanar view. In the main GUI click on the triplanar button and you will see the window displayed.



DIFFPCALC processing details are available at the following location:
https://science.nichd.nih.gov/confluence/display/nihpd/DIFF_CALC+Main